Deploying Distributed Generation (DG) In California

Norwegian Delegation

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California Energy Commission

For Additional Information, Please Contact Me...

- DG Policy Status
- Interconnection Issues
- Net metering Status
- Utility Rate Issues
- R&D Activities

California is a Leader in Self-Generation

Distributed generation accounts for more than 2500 megawatts in California.

Reliability
Power Quality
Cost Savings

California Has a DG Strategy...

- Energy Commission adopted DG Strategic Plan in June 2002
- Plan's Vision: DG will be an integral part of California's energy system…provided it makes sense to do so
- **However, prospects for effective DG deployment depend upon removing regulatory, institutional, and business-related barriers**

Agency Collaboration is Essential to the Future Success of the Plan!!!!

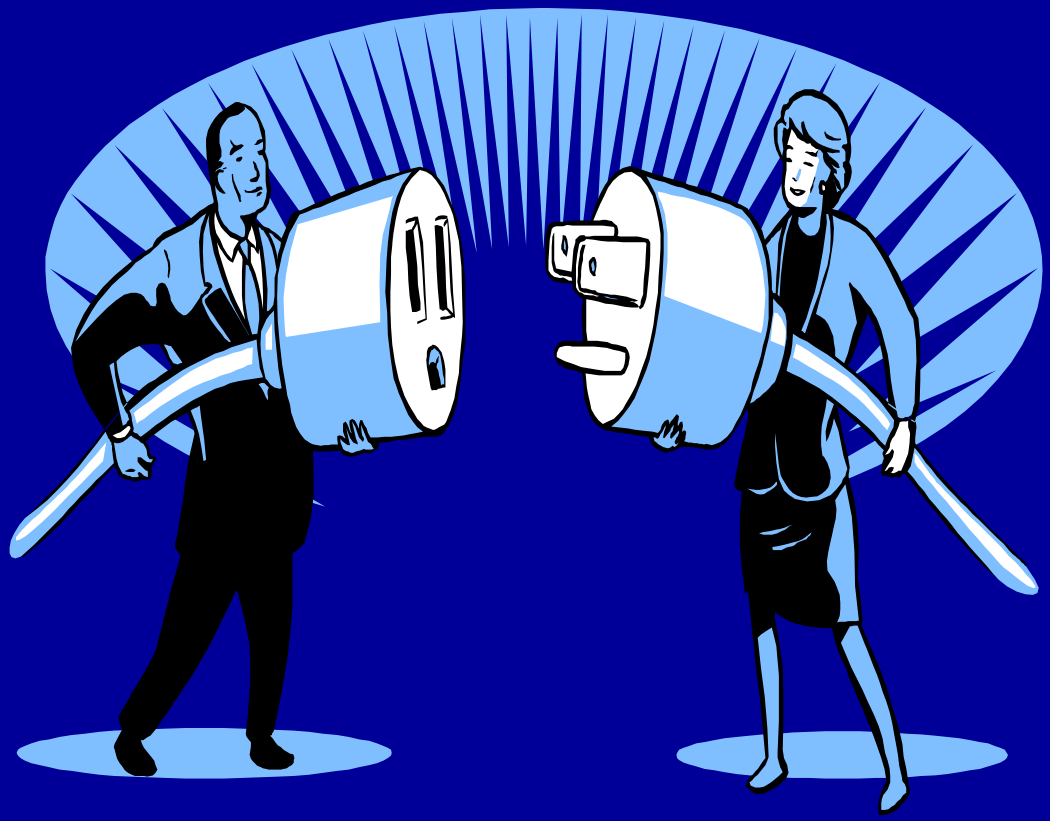
California Policymakers Remain Interested in DG

- Energy Action Plan adopted by the CPUC, Energy Commission, and Power Authority commit to the active deployment of DG

- CPUC initiated a new DG rulemaking in March 2004, with close collaboration with the Energy Commission
  - Major emphasis is on cost/benefit analysis
  - Will tie in Energy Commission R&D efforts to public policy objectives

- DG Equipment presently being certified by California Air Resources Board and reviewing emission standards established in 2002

Interconnection Issues...



What Were the Guiding Principles?

- Rules, protocols and processes should be clear and transparent
- Rules should be technology neutral, except when differences are fully justified
- A level playing field should be established for all DG providers
- Rules should be uniform throughout California
- Utilities should be fairly compensated for distribution services that support DG installations and customers

Issues Addressed by the Interconnection Working Group

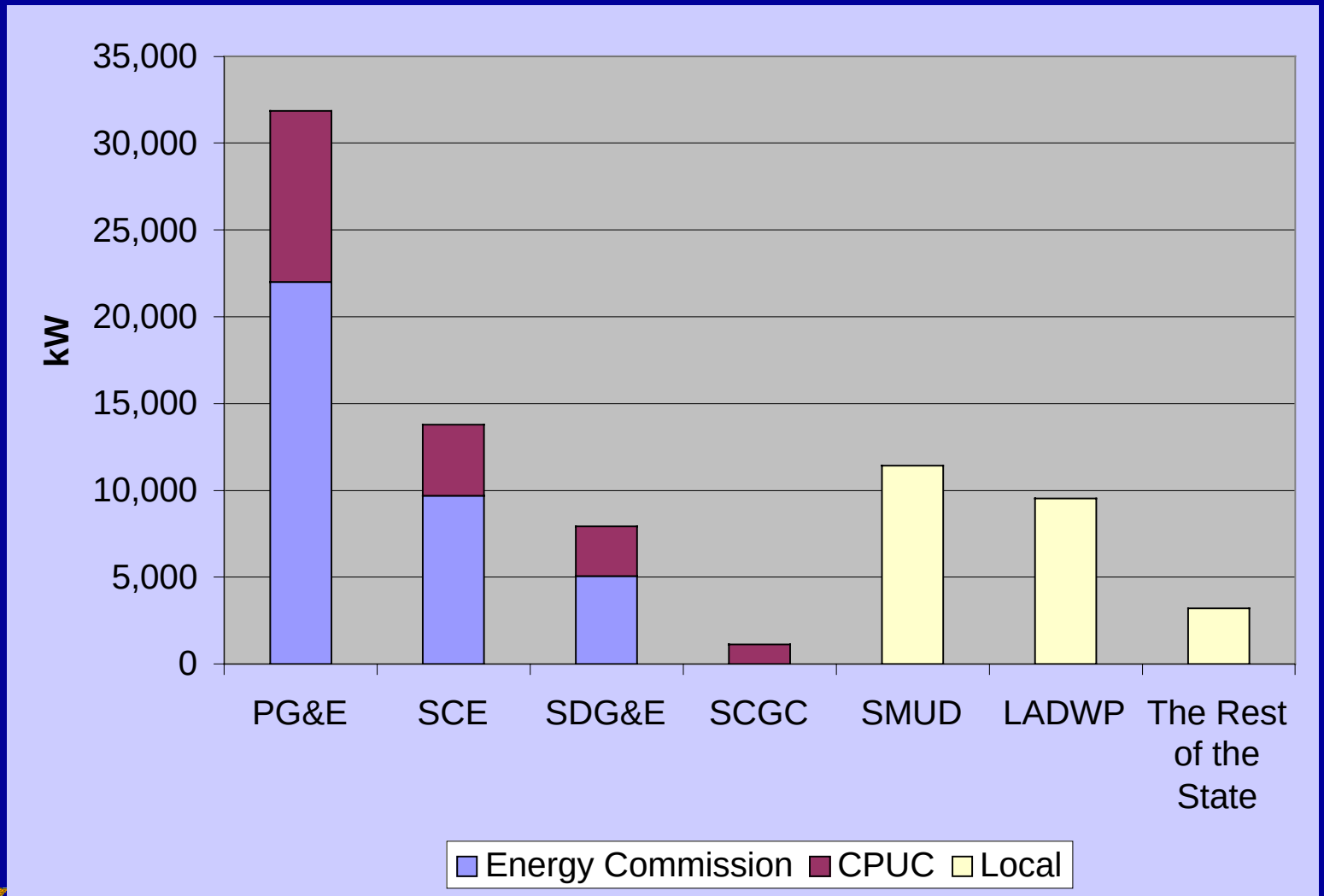
- Interconnection Fees
- Testing and Certification Procedures
- Clear Engineering Review Process
- Interconnection Agreements
- Application Forms (Paper and Electronic)
- Process for Continuing Refinement

Accomplishments of Interconnection Working Group

- Standardized rule language for PG&E, SCE, and SDG&E
- Standardized application forms and agreements
- Clear procedures for evaluating DG applications
  - More certain time review
  - Costs of review not prohibitive
  - Equipment testing procedures identified
- Tools continue to be developed to help understand and evaluate DG projects

Net Metering...

Net Metering Preamble: California Has Lots of PV



Net Metering Overview

- Defined as the ability to generate electricity to an electric distribution grid system and receive a bill credit for deliveries to the grid
- Size limited to one megawatt or less in California
- Recent mandates have extended the program from PV and wind to fuel cells and biomass

Net Metering is Very Popular in California

Projects Receiving Energy Commission Rebates

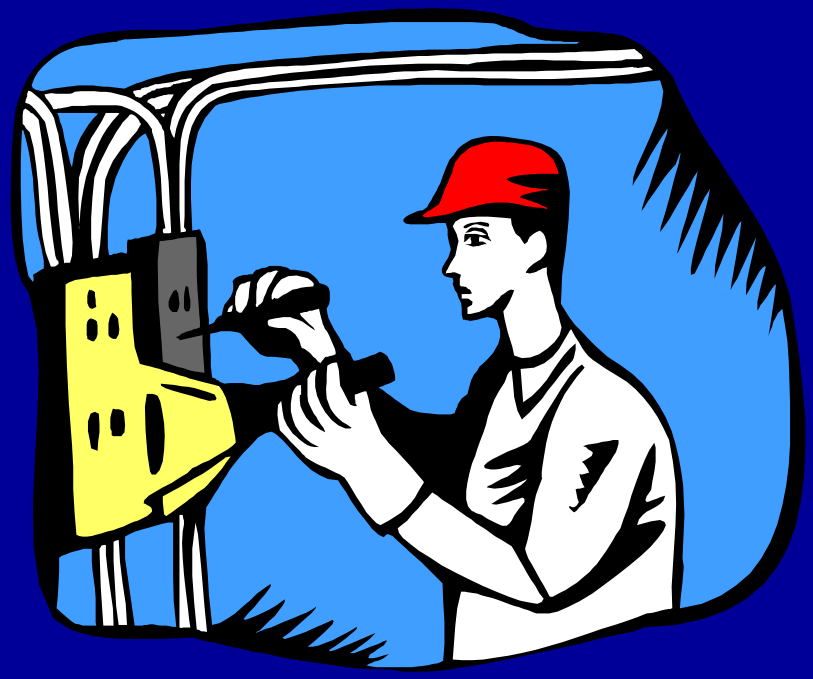
Year	*Number*	*MW*	*Payments ($ Millions)*
1998	41	181	$0.5
1999	197	1,060	$2.9
2000	235	802	$2.2
2001	1,292	4,294	$16.9
2002	2,331	8,501	$36.4
2003	3,022	12,917	$52.1
2004*	2,938	12,641	$47.6
Grand Total	10,056	40,395	$158.7

* 2004 figures through August 2nd

Rate Design...

California Standby Rate Design Policies for Distributed Generation

- DG customers can avoid standby charges if it provides utility with physical assurance
- It is appropriate to recover distribution infrastructure costs from backup customers
- Public purpose costs should continue to be collected from standby customers
- Charges should recover fixed costs through reservation charges and variable costs through usage charges



DG Rate Design Has Progressed Slowly in California

- Utilities submitted DG rate design applications in September 2001
- Parties filed comments in utility proposals in October/November 2001
- No action taken through most of 2002, eventually rejecting utility proposals
- CPUC instead decided to incorporate rate design proposals into utility rate design proceedings
- Unclear when final resolution will occur

California Standby Rate Exemptions Are Available

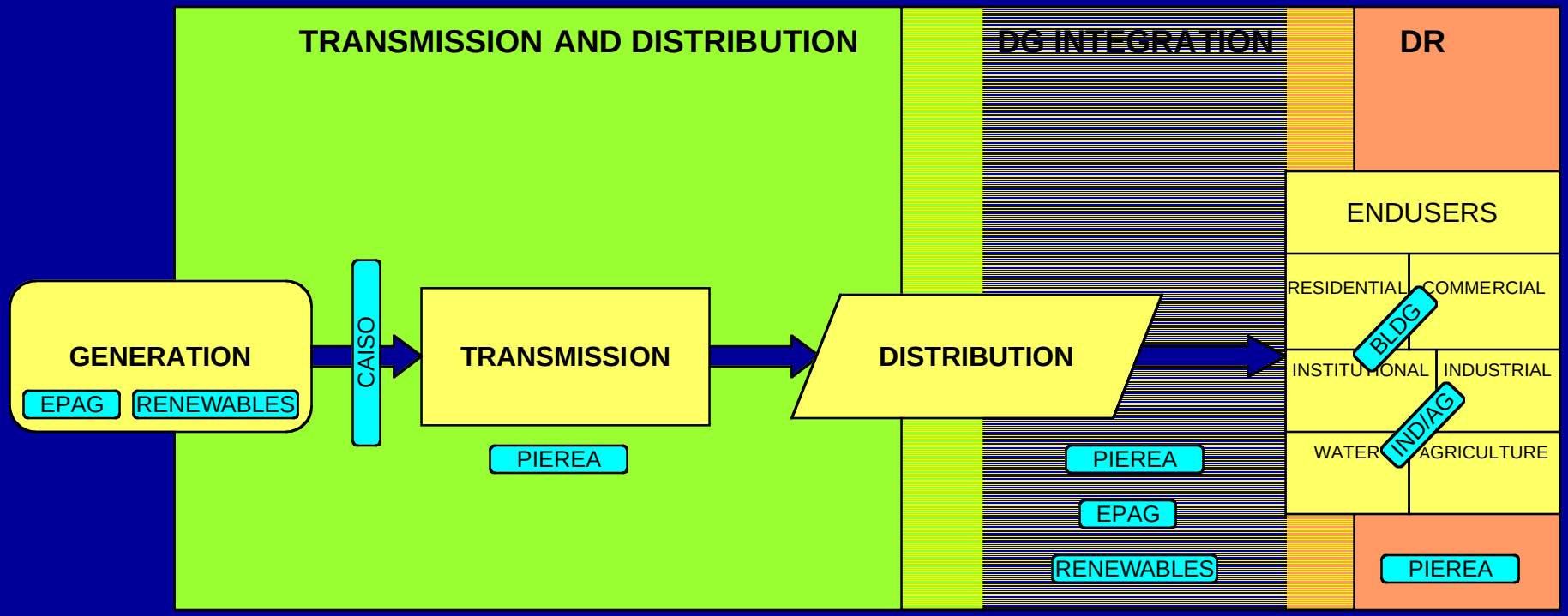
California Senate Bill 28 1X required utilities to provide DG customers with exemption from standby charges

- Through June 2011 for customers installing CHP-related generation between May 2001 and June 2004
- Though June 2006 for customers installing non-CHP applications between May 2001 and September 2002
- Through June 2011 for "Ultra-Clean and Low-emission DG customers 5 MW and less installed between January 2003 and December 2005
- Solar less than or equal to 1 MW that do not sell power to the grid

And Finally, Our R&D Efforts...

Public Interest R&D Program Taxonomy

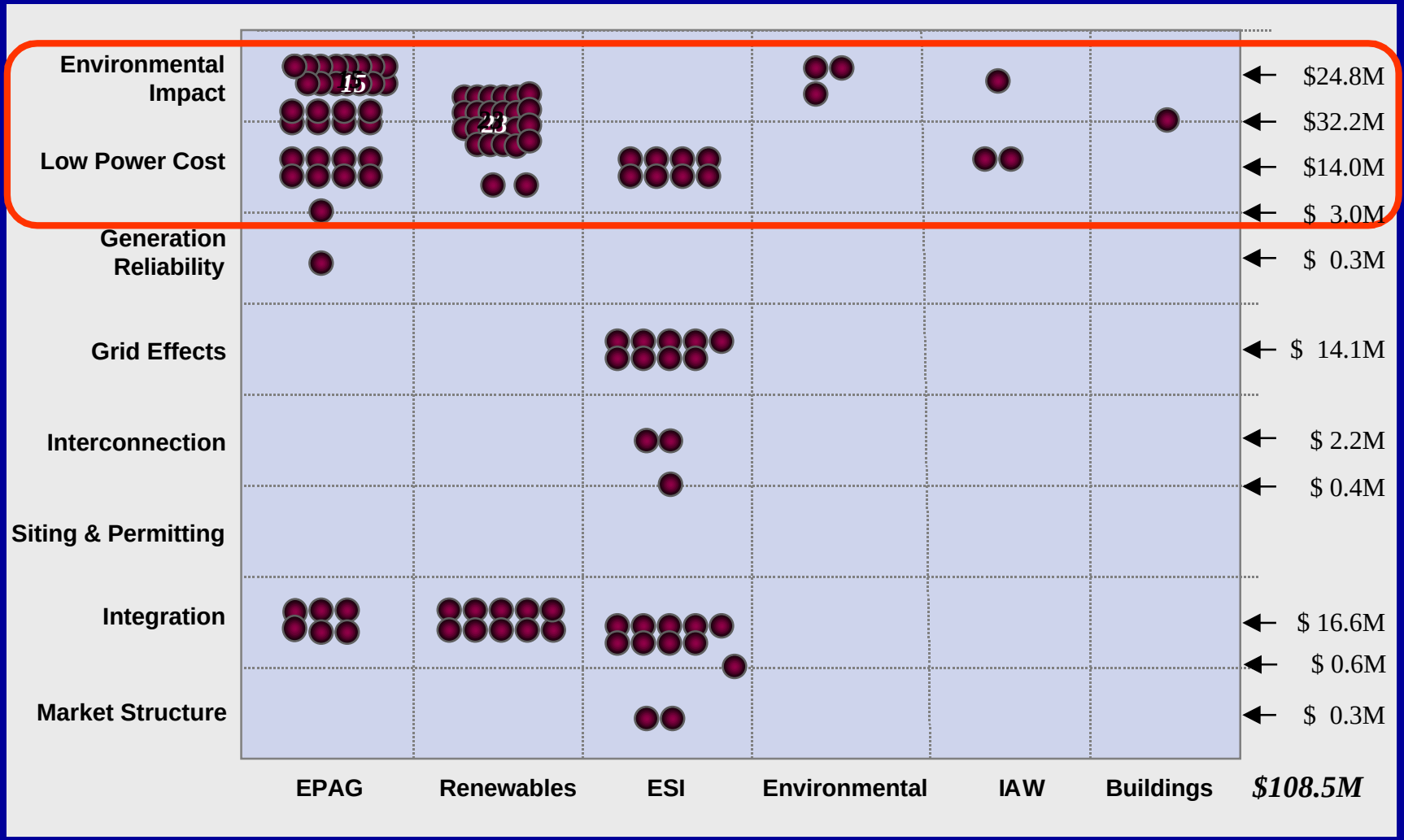
Crosscutting R&D portfolio address all aspects of electricity enterprise including environmental issues



DG R&D constitutes significant portion of portfolio

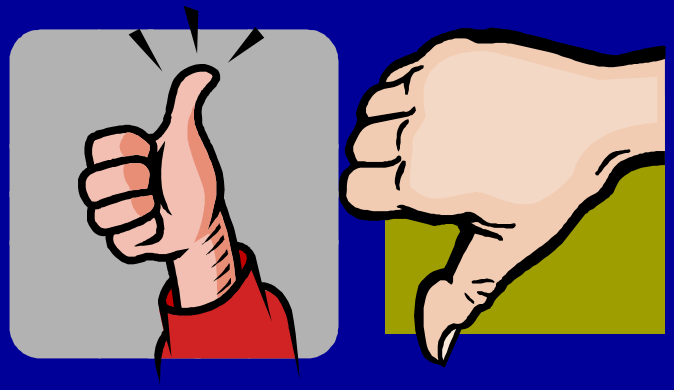
DG R&D Portfolio

- 111 DG projects total $108.5M out of over $324M in total R&D
- 68% of portfolio focused on cleaning up DG and reducing costs

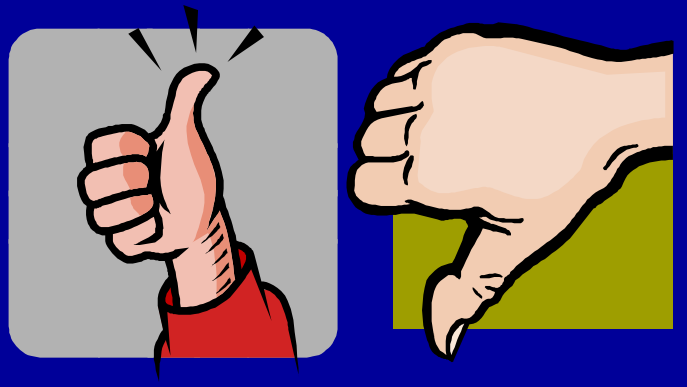


DG Policies in California Have Had Mixed Results

Surcharges



Incentives



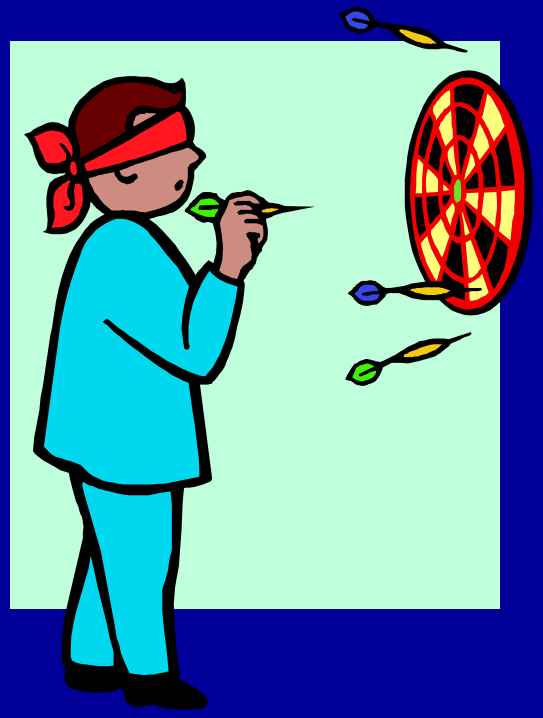
Interconnection

Utility Procurement

Net Metering

Some Final Thoughts

- DG is a critical piece of the energy solution in California and the nation
- With merchant generation a major uncertainty, industry stakeholders, utilities, regulators, and policymakers must work toward the effective deployment of DG
- R&D efforts must continue despite growing frustration with barrier removal



For Additional Information, Please Contact Me...

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California Energy Commission DG Website Resources

www.energy.ca.gov/distgen